

WE CLAIM:

Sub. B1> 1. A standup bag, comprising:

an enclosure made from at least one sheet of material,

the enclosure being defined by at least one wall, the walls being substantially rigid when the enclosure is filled with a flowable substance; and

at least one contour structure, wherein the contour structure defines a geometric shape of the enclosure.

2. The standup bag of claim 1, further comprising:

wherein the walls include a front wall, a rear wall, a first side wall, a second side wall, a top wall, and a bottom wall;

wherein the contour structure includes:

a first upper seal extending from a first upper corner of the first side wall,

a second upper seal extending from a second upper corner of the first side wall,

the first upper seal and the second upper seal joining to form a first V-shaped seal,

a first lower seal extending from a first lower corner of the first side wall,

a second lower seal extending from a second lower corner of the first side wall,

the first lower seal and the second lower seal joining to form a second V-shaped seal,

a longitudinal seal joining the first V-shaped seal to the second V-shaped seal;

and

at least one fitment attached to at least one sheet and out through which the flowable substance may enter or be withdrawn from the enclosure.

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3. The standup bag of claim 2, further comprising:  
a second contour structure, wherein the contour structure includes:  
a first upper seal extending from a first upper corner of the second side wall;  
a second upper seal extending from a second upper corner of the second side wall, the first upper seal and the second upper seal joining to form a first V-shaped seal;  
first lower seal extending from a first lower corner of the second side wall;  
second lower seal extending from a second lower corner of the second side wall, the first lower seal and the second lower seal joining to form a second V-shaped seal;  
and  
a longitudinal seal joining the first V-shaped seal of the second side wall to the second V-shaped seal of the second side wall.
4. The standup bag of claim 1, wherein the wall is substantially flat to form a stable base to allow the rigid bag to stand stable on a level surface, and wherein the wall directly contacts the level surface when standing on the level surface.
5. The standup bag of claim 1, wherein at least one wall has a polygonal shape, wherein the polygonal shape is selected from the group consisting of a square, a rectangle, a parallelogram, and a trapezoid.
6. The standup bag of claim 5, wherein at least two opposing walls have the same polygonal shape.
7. The standup bag of claim 6, wherein at least four opposing walls have the same polygonal shape.
8. The standup bag of claim 1, further comprising at least one handle.
9. The standup bag of claim 8, wherein the standup bag includes two handles.
10. The standup bag of claim 8 wherein the handle is attached to a seal.

11. The standup bag of claim 8 wherein the handle is reinforced.
12. The standup bag of claim 8 wherein the handle is a loop.
13. The standup bag of claim 8 wherein the handle is planar.
14. The standup bag of claim 13 wherein the handle includes a recess.
15. The standup bag of claim 13 wherein the handle includes at least one opening.
16. The standup bag of claim 1 further including at least one panel attached to the outer surface of the at least one wall.
17. The standup bag of claim 16 wherein the panel includes at least one grasping member.
18. The standup bag of claim 3 further including at least one reinforcing member disposed at the junctions of the first and second upper seals and the longitudinal seal of the first side wall, the first and second lower seals and the longitudinal seal of the first side wall, the first and second upper seals and the longitudinal seal of the second side wall, the first and second lower seals and the longitudinal seal of the second side wall.
19. The standup bag of claim 1 further including at least one ply of material.
20. The standup bag of claim 1 wherein the sheet of material comprises at a plurality of layers laminated together.
21. The standup bag of claim 1 wherein the sheet of material comprises a plurality of layers joined together along the perimeter of the layers.
22. A standup bag comprising:
- at least one wall made from a flexible material, a bottom member, and a top member, wherein the at least one wall is disposed between the bottom member and the top member to define an enclosure;
- at least one contour structure included on the walls;

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at least one fitment in communication with the enclosure; and

the bag being self-standing when filled with a flowable substance.

23. The standup bag of claim 22 wherein the enclosure is substantially brick-shaped.
24. The standup bag of claim 22 wherein the walls have shapes selected from the group consisting of a square, a rectangle, a triangle, and a trapezoid.
25. The standup bag of claim 24, wherein at least two walls have the same shape.
26. The standup bag of claim 24, wherein four walls have the same shape.
27. The standup bag of claim 24, wherein all walls have the same shape.
28. The standup bag of claim 22, further comprising at least one grasping member.
29. The standup bag of claim 22 wherein the standup bag includes at least one ply of material.
30. The standup bag of claim 22 wherein the sheet of material comprises at a plurality of layers laminated together.
31. The standup bag of claim 22 wherein the sheet of material comprises a plurality of layers joined together along the perimeter of the layers.
32. The standup bag of claim 22 further including at least one panel attached to the outer surface of the at least one wall.
33. The standup bag of claim 32 wherein the panel includes at least one grasping member.
34. The standup bag of claim 22 further including at least one reinforcing member disposed at the junctions of the first and second upper seals and the longitudinal seal of the first side wall, the first and second lower seals and the longitudinal seal of the first side wall, the first and second upper seals and the longitudinal seal of the second side wall, the first and second lower seals and the longitudinal seal of the second side wall.

35. The standup bag of claim 22 wherein the enclosure is formed from at least one layer of material.
36. The standup bag of claim 22 wherein the at least one fitment is located on the walls of the enclosure.
37. The standup bag of claim 22 wherein the at least one fitment is located on a seal.
38. The standup bag of claim 22 further comprising at least one handle attached to the enclosure.
39. The standup bag of claim 38 wherein the handle is attached to a seal.
40. The standup bag of claim 38 wherein the handle is reinforced.
41. The standup bag of claim 38 wherein the handle is a loop.
42. The standup bag of claim 38 wherein the handle is planar.
43. The standup bag of claim 42 wherein the handle includes a recess.
44. The standup bag of claim 42 wherein the handle includes at least one opening.
45. The standup bag of claim 22 further comprising at least one panel attached to the outer surface of the flat walls.
46. The standup of bag of claim 45 wherein the at least one panel includes at least one grasping member.
47. A web of standup bags, the web comprising:
- at least two standup bags, wherein the standup bags include at least one substantially flat wall and a plurality of walls defining an enclosure;
- at least one contour structure provided on the walls of the enclosure, wherein the standup bags are joined by the contour structures.

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48. The web of claim 47, wherein the web further includes at least one stay member joining the at least two standup bags.

49. The web of claim 47 wherein perforations are disposed between the adjacent contour structures.

50. A web of standup bags, the web comprising:

a plurality of standup bags, wherein the standup bags includes a substantially flat bottom wall, a plurality of walls defining an enclosure;

at least one contour structure provided on the walls of the enclosure; and

at least one stay member, wherein the plurality of standup bags are joined by the contour structures and the stay members.

51. The web of claim 50 wherein perforations are disposed between adjacent contour structures.

52. A web of standup bags, the web comprising:

a plurality of standup bags, wherein the standup bags comprises a plurality of walls and the walls include at least one substantially flat wall being free of seams, and at least one contour structure; and

adjacent standup bags are joined together by a heat seal.

53. The web of claim 52, wherein the heat seal is a longitudinal heat seal.

54. The web of claim 52, wherein the heat seal is a head heat seal.

55. The web of claim 52, wherein the heat seal is a contour structure.

56. A method of storing flowable substance, comprising:

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providing an enclosure having a first configuration and a second configuration, wherein the enclosure in the first configuration is substantially flat and the enclosure in the second configuration is self-standing; and

introducing a flowable substance through a fitment into the enclosure having the first configuration, wherein the flowable substance causes the enclosure to achieve the second configuration.

57. A method of making a standup bag comprising:

providing a sheet of material having at least four edges;

securing the first edge of the material to the second edge of the material to form a first seal;

creating a first fold substantially parallel to the first edge, wherein a distance between the first fold and the first edge defines a first surface of the bag;

creating a second fold substantially parallel to the first fold, wherein the second fold is at the opposite end of the first fold;

forming a second seal extending from the first fold to the second fold; and

forming a third seal extending from the first fold to the second fold, wherein the third seal is opposite the second seal.

58. The method of claim 57 wherein the first seal, second seal, and third seal are substantially U-shaped seals.

59. The method of claim 57 further comprising attaching at least one fitment to the sheet of material prior securing the first edge to the second edge.

60. The method of claim 57 further comprising positioning at least one fitment between the edges of the first seal, the second seal, or the third seal.

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61. The method of claim 57 further comprising forming at least one integrated handle on the standup bag.

62. The method of claim 57, further comprising attaching at least one handle to the standup bag.

63. The method of claim 57 further comprising inserting reinforcing members along the edges between the first fold and the second fold prior to forming the second and third seals.

64. A method of making a standup bag comprising:

positioning a first sheet of material on a second sheet of material;

securing the first sheet to the second sheet by forming a first seal and a second seal, wherein the second seal is opposite the first seal;

creating a first fold substantially parallel to the first edge, wherein a distance between the first fold and the first edge defines a first surface of the bag;

creating a second fold substantially parallel to the second edge, wherein a distance between the second fold and the second edge defines a second surface of the bag;

forming a second seal extending from the first fold to the second fold;

forming a third seal extending from the first fold to the second fold, wherein the second seal is opposite the third seal.

65. The method of claim 64 wherein the first seal, second seal, and third seal are substantially U-shaped seals.

66. The method of claim 64 further comprising attaching a fitment to the sheet of material prior securing the first edge to the second edge.



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(g) applying steps (a) – (f) to the remaining corners of the standup bag.

72. The method of claim 71 wherein the first wall is a front wall or a back wall of the standup bag.

73. The method of claim 72 wherein the second wall is a top wall or a bottom wall.

74. A method of designing a standup bag, the method comprising:

(a) determining a geometry of the standup bag having at least one contour structure, wherein the standup bag comprises a top wall, a bottom wall, a front wall, a bottom wall, a first side wall, and a second side wall;

(b) selecting an angle (C), wherein the angle (C) comprises a first corner of a front wall;

(c) selecting an angle (D), wherein the angle (D) comprises a first corner of a bottom wall;

(d) selecting an angle (G), wherein the angle (G) comprises a first corner of a first side wall;

(e) calculating a third angle (F), wherein  $F = ((G + D - C)/2)$ ;

(f) calculating a forth angle (H), wherein  $H = ((G + C - D)/2)$ ;

wherein the third and forth angles comprise the first corner of the first side wall, and the first corner of the front wall, the first corner of the bottom wall, and the first corner of the first side wall form a first corner of the standup bag; and

(g) applying steps (a) – (f) to the remaining corners of the standup bag.

75. A method of forming a standup bag, the method comprising:

providing at least one sheet of material;

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defining a geometry of the standup bag, wherein the standup bag includes at least one substantially flat surface and at least one contour structure; and

determining the shape of the contour member by predetermined algorithm.

76. A method of making a web of standup bags, the method comprising:

providing a first roll and a second roll of material;

unwinding a portion of the first roll;

punching a hole in the unwound portion of the first roll;

fitting a fitment through the hole;

unwinding and placing a portion of the second roll atop the unwound portion of the first roll;

removing material from the corners of the first unwound portion and the second unwound portion;

sealing the first unwound portion and the second unwound portion by a first horizontal seal and a second horizontal seal;

folding the first and second unwound portions to form substantially flat surfaces; and

sealing the longitudinal surfaces of first and second unwound portions with at least two substantially U-shaped seals to form the web of standup bags.

77. The method of claim 76 further comprising:

folding the first and second unwound portions to form a substantially flat surface prior to sealing the first and second unwound portions with the at least two substantially U-shaped seals.

78. The method of claim 77 further comprising:

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inserting reinforcing members along the longitudinal surfaces prior to sealing the first and second unwound portions with the at least two U-shaped seals.

79. The method of claim 76 further comprising:

perforating the substantially U-shaped seal disposed between adjacent standup bags.

80. A fitment attached to a flexible bag, the fitment comprising:

a cylindrical body having a lumen, a first end, and a second end;

a cylindrical carrier attached to the first end of the cylindrical body, wherein the cylindrical carrier is detachable from the cylindrical body; and

a closure capable of sealing the lumen of the cylindrical body.

81. The fitment of claim 80 further comprising:

a stopping member disposed within the lumen of the cylindrical body.

82. The fitment of claim 80 further including an annular groove disposed between the first end of the cylindrical body and the cylindrical carrier, wherein the carrier is detachable from the cylindrical body at the annular groove.

83. The fitment of claim 80 further comprising:

an annular recess disposed about the first end of the cylindrical body; and

a bulbous end disposed on the second end of the cylindrical carrier, wherein the bulbous end is adapted to engage and disengage the annular recess.

84. The fitment of claim 83 further comprising:

a stopping member disposed within the lumen of the cylindrical body.

85. A fitment attached to a flexible bag, the fitment comprising:

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a cylindrical body having a lumen, a first end, and a second end;

a cylindrical carrier attached to the first end of the cylindrical body;

an annular groove disposed between the first end of the cylindrical body and the cylindrical carrier, wherein the carrier is detachable from the cylindrical body at the annular groove; and

a closure capable of sealing the lumen of the cylindrical body.

86. The fitment of claim 85 further comprising:

a stopping member located within the lumen of the cylindrical body.

87. A fitment attached to a flexible bag, the fitment comprising:

a cylindrical body having a lumen, a first end, a second end, and an annular recess disposed about the first end of the cylindrical body;

a cylindrical carrier having a first end and a second end, wherein the second end of the cylindrical carrier is adapted to engage and disengage the annular recess; and

a closure capable of sealing the lumen of the cylindrical body.

88. The fitment of claim 87 further comprising:

a stopping member located within the lumen of the cylindrical body.

89. A fitment attached to a flexible bag, the fitment comprising:

a cylindrical housing having a first end, a second end, and a lumen therebetween;

a cylindrical sleeve having a lumen, the sleeve slidably engaging the cylindrical body,

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the cylindrical sleeve having a first position and a second position wherein in the first position the sleeve protrudes from the first end of the cylindrical body, and in the second position the sleeve engages the first end of the cylindrical body; and

a closure slidably engaging or disengaging the lumen of the sleeve.

90. A fitment attached to a flexible bag, the fitment comprising:

a cylindrical ring having a lumen disposed between a first end and a second end, and at least one annular groove disposed on an inner surface of the lumen;

a cylindrical sleeve, wherein the cylindrical sleeve is slidably engages the lumen of the cylindrical ring, the cylindrical sleeve comprising:

a lumen disposed between a first end and a second end;

at least one port arranged about the circumference of the cylindrical sleeve;

a base member positioned within the lumen below the port; and

at least one annular ridge positioned on an outer surface of the sleeve, wherein the annular ridge is adapted to engage the annular groove of the cylindrical ring; and

the cylindrical sleeve having a first position and a second position,

in the first position, an interior of the bag is sealed when the annular ridge engages the annular groove, and

in the second position, the flange of the sleeve engages the first end of the cylindrical ring and the at least one port is in communication with an interior of the standup bag.

91. A fitment attached to a flexible bag, the fitment comprising:

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a cylindrical ring having a lumen disposed between a first end and a second end, and at least one sleeve cooperating means disposed on an inner surface of the lumen;

a cylindrical sleeve, wherein the cylindrical sleeve is slidably disposed in the lumen of the cylindrical ring, the cylindrical sleeve comprising:

a lumen disposed between a first end and a second end;

at least one port disposed arranged about the circumference of the cylindrical sleeve;

a base member positioned within the lumen below the at least one port; and

at least one ring cooperating means positioned on an outer surface of the sleeve, wherein the ring cooperating means is adapted to engage the sleeve cooperating means of the cylindrical ring; and

the cylindrical sleeve having a first position and a second position, wherein

in the first position, an interior of the bag is sealed when the ring cooperating means engages the sleeve cooperating means, and

in the second position, the ring cooperating means is disengaged from the sleeve cooperating means and the at least one port is in communication with the interior of the standup bag.

92. A standup bag formed from a flexible material, the standup bag comprising:

an enclosure, wherein the enclosure includes a plurality of substantially flat walls;

at least one fitment attached to the enclosure, wherein a flowable substance may enter or be withdrawn from the enclosure;

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a contour structure provided on at least two walls of the enclosure, wherein the contour structure defines the shape of the enclosure when the enclosure is filled with the flowable substance;

at least one of the plurality of flat walls being free of seams, wherein the flat wall forms a stable base to allow the enclosure filled with the flowable substance to stand; and

at least one grasping member attached to the standup bag, wherein the grasping member extends away from the walls of the standup bag.

93. The standup bag of claim 92 wherein the grasping member is substantially planar and is attached to a seal.

94. The standup bag of claim 92 wherein the grasping member includes an opening, wherein a portion of the opening is reinforced.

95. The standup bag of claim 92 wherein the grasping member is substantially planar and is attached to a seal, and the grasping member includes a partial cutout portion, wherein the cutout portion is folded to form a reinforcement member on the grasping member.

96. The standup bag of claim 92 wherein the grasping member is a looped member extending from at least one seal.

97. The standup bag of claim 93 wherein the grasping member includes at least one opening adapted to be grasped.

98. The standup bag of claim 92 wherein the grasping member is substantially planar and is attached to a seal, and the grasping member includes a recess.

99. A standup bag formed from a flexible material, the standup bag comprising:

an enclosure, wherein the enclosure includes a plurality of substantially flat walls;

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a contour structure provided on at least two walls of the enclosure, wherein the contour structure defines the geometric shape of the enclosure when the enclosure is filled with the flowable substance;

at least one of the plurality of substantially flat walls being free of seams, wherein the substantially flat wall forms a stable base to allow the enclosure filled with the flowable substance to be self-standing; and

at least one grasping member attached to the standup bag, wherein the grasping member extends away from the substantially flat walls.

100. The standup bag of claim 99 further comprising:

at least one fitment attached to the enclosure, wherein a flowable substance may enter or be withdrawn from the enclosure through the fitment.

101. A handle for a standup bag formed from a flexible material, the handle comprising:

a substantially planar member having a generally rectangular shape, a first edge and a second edge, wherein the first edge is attached to the standup bag.

102. The handle of claim 101 wherein the second edge is attached to the standup bag to form a loop.

103. The handle of claim 101 wherein the substantially planar member includes a pocket having an opening at one end, wherein the pocket is defined by a fold located between the first edge and the second edge and two seals substantially perpendicular to the edges.

104. The handle of claim 101 wherein the planar member includes a third and forth edge, and the third and forth edge are attached to the standup bag, wherein a pocket is defined by the planar member and at least one wall of the standup bag.

105. A standup bag formed from a flexible material, the standup bag comprising:

an enclosure, wherein the enclosure includes a plurality of substantially flat walls;

at least one fitment attached to the enclosure, wherein a flowable substance may enter or be withdrawn from the enclosure;

a contour structure provided on at least two walls of the enclosure, wherein the contour structure defines the shape of the enclosure when the enclosure is filled with the flowable substance;

at least one of the plurality of flat walls being free of seams, wherein the substantially flat wall forms a stable base to allow the enclosure filled with the flowable substance to be self-standing; and

at least one grasping member integral with the enclosure, the at least one grasping member includes a first edge and a second edge, wherein the first edge and the second edge are attached to the contour structures.

106. A method of designing a standup bag having a first and second configuration wherein the standup bag in the first configuration is substantially flat and the standup bag is self-standing when filled with a flowable substance in the second configuration, the method comprising:

selecting a width, a height, and a depth of the standup bag; and

determining a geometry of the standup bag by a predetermined algorithm.

107. The method of claim 106 wherein the predetermined algorithm comprises:

(a) selecting an angle (C), wherein the angle (C) comprises a first corner of a first wall of the standup bag;

(b) selecting an angle (D), wherein the angle (D) comprises a second corner of a second wall of the standup bag;

(c) selecting an angle (G), wherein the angle (G) comprises a third corner of a third wall of the standup bag;

(d) calculating a third angle (F), wherein  $F = ((G + D - C)/2)$ ;

(e) calculating a forth angle (H), wherein  $H = ((G + C - D)/2)$ ;

wherein the third and forth angles comprise a third corner of a third wall, and the first, second, and third corners form a first corner of the standup bag; and

(f) applying steps (a) – (e) to the remaining corners of the standup bag.

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